

Department of Energy
Carlsbad Field Office
P. O. Box 3090
Carlsbad, New Mexico 88221

JUN 24 2004

ENTERED



Mr. Steve Zappe, WIPP Project Leader
Hazardous Waste Permits Program
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2905 E. Rodeo Park Drive, Bldg. 1
Santa Fe, NM 87505

Subject: Transmittal of Approved Change Notice Number 1 for Rocky Flats
Environmental Technology Site Waste Stream Profile Form Number RF101.35
– TRM Combustible and Plastic Wastes

Dear Mr. Zappe:

The Carlsbad Field Office (CBFO) has approved the change notice number 1 for Rocky Flats Environmental Technology Site (RFETS), Waste Stream Profile Form RF101.35. Enclosed is a copy of the approved form as required by Section B-4(b)(1) of the WIPP Hazardous Waste Facility Permit No. NM4890139088-TSDF.

If you have any questions on this matter, please contact me at (505) 234-7357 or (505) 706-0066.

Sincerely,

Kerry W. Watson
CBFO Assistant Manager
Office of National TRU Program

Enclosure

cc: w/o enclosure
J. Kieling, NMED
C. Walker, TechLaw
K. Jackson, WTS *ED
M. Strum, WTS *ED
D. Bignell, WRES *ED
R. Chavez, WRES *ED
L. Greene, WRES
S. Calvert, CTAC
CBFO M&RC

*ED denotes Electronic Distribution

CBFO:NTP:KWW:JGW:04-1497:UFC:5822

040634



Update for WIPP Operating Record (Change Notice #1)

TRM Combustible and Plastic Wastes (F005) (RF101.35)

Please add the following information to the WIPP Operating Record for WSPF #RF101.35, Revision 0. This waste stream is TRM Combustible and Plastic Wastes (F005) and was approved by DOE/CBFO on September 22, 2003. Please update related files as you deem appropriate.

The Waste Stream Profile Form (WSPF) is being revised. The WSPF components are bolded. The updates are:

1. **Number of Drums:** Change to 252 drums.
2. **Number of SWBs:** Change to 2 standard waste boxes.

The Acceptable Knowledge (AK) Summary attachment to the WSPF is being revised. The AK Summary components are bolded. The updates are:

- **Waste Stream (Retrievably Stored):** Revised category to specify 212 55-gallon drums and 1 SWB.
- **Waste Stream (Newly Generated):** Revised category to specify 40 55-gallon drums and 1 SWB with dates of October 2001 – May 2003.

Generation Processes:

- Deleted Table 7.12-2 and changed first paragraph to read: This waste stream includes combustible and plastic wastes generated as non-hazardous waste by nearly every operation on site. EPA hazardous waste number F005 is assigned to these containers because detectable concentrations of carbon disulfide, methy ethyl ketone, benzene, or toluene was found in the container headspace.⁽⁴⁾ A detailed description of the waste generating processes and their process flow diagrams can be found in the WSRIC Building Books or archived WSRIC files.

Reason/Justification for Change:

The update to waste stream volume is needed to more accurately reflect the known increase in the volume in the generation of the waste stream with respect to what was originally estimated.

Deleted Table 7.12-2 to comply with current procedural requirements for preparation of AK Summaries and to make the document compositionally consistent with current AK Summaries prepared for recently approved waste streams.

Update for WIPP Operating Record (WSPF RF101.35) certification:

I hereby certify that I have reviewed the information in this Update for WIPP Operating Record, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.


Signature of Site Project Manager

G. A. O'Leary, Manager TRU Programs
Printed Name and Title

6-22-04
Date

Waste Stream Profile Number: RF101.35Generator site name: RFETSGenerator site EPA ID: CO7890010526Technical contact: Eric D'AmicoPhone number: (303) 968-5362Date of audit report approval by NMED: March 9, 2000 as amended February 7, 2001; June 5, 2001; April 8, 2002; August 20, 2002; August 29, 2002; and April 8, 2003Title, version number, and date of documents used for WAP certification: Rocky Flats Environmental Technology Site TRU Waste Characterization Program Quality Assurance Project Plan, 95-QAPjP-0050, Revision 7, July 2003.Transuranic (TRU) Waste Management Manual, Revision 6, 1-MAN-008-WM-001, June 2003. Contact-HandledTransuranic Waste Acceptance Criteria for the Waste Isolation Pilot Plant, Revision 0.1, July 2002.Did your facility generate this waste? ☒ Yes ☐ No If no, provide the name and EPA ID of the original generator:Waste Stream Information⁽¹⁾WIPP ID: RF101.35⁽³⁾Summary Category Group: S5000⁽³⁾Waste Matrix Code Group: Combustible Waste⁽³⁾Waste Stream Name: TRM Combustible and Plastic Wastes (F005)⁽³⁾Description from the WTWBIR: Cloth, paper, cellulosic, and plastic debris material generated from plutonium operations/activities with assigned EPA Hazardous Waste Number F005.⁽³⁾Defense TRU Waste: ☒ Yes ☐ NoCheck one: ☒ CH ☐ RH Number of SWBs 1 Number of Drums 192 Number of Canisters N/ABatch Data Report numbers supporting this waste stream characterization: See Table 7.List applicable EPA Hazardous Waste Codes⁽²⁾: F005Applicable TRUCON Content Codes: RF 116A, RF 116C, RF 116D, RF 116DF, RF 116E, RF 116EF, RF 116F, RF 116G, RF 116GF, RF 116H, RF 116I, RF 116J, RF 116K, RF 116KF, RF 116L, RF 116M, RF 116MF, RF 116N, RF 116P, RF 116PF, RF 116Q, RF 116R, RF 116RF, RF 116S, RF 116SF, RF 116TAcceptable Knowledge Information⁽¹⁾Required Program Information

- Map of site: Reference List, No. 3
- Facility mission description: Reference List, No. 3
- Description of operations that generate waste: Reference List, Nos. 1, 2, 3, 6
- Waste identification/categorization schemes: Reference List, Nos. 8, 9
- Types and quantities of waste generated: Reference List, Nos. 1, 2, 3, 6
- Correlation of waste streams generated from the same building and process, as appropriate: Reference List, Nos. 1, 2, 6
- Waste certification procedures: Reference List, No. 5

Required Waste Stream Information

- Area(s) and building(s) from which the waste stream was generated: Reference List, Nos. 1, 2, 6
- Waste stream volume and time period of generation: Reference List, Nos. 4, 6
- Waste generating process description for each building: Reference List, Nos. 1, 2, 6
- Process flow diagrams: Reference List, Nos. 1, 2
- Material inputs or other information identifying chemical/radionuclide content and physical waste form: Reference List, Nos. 1, 2, 3, 6
- Which Defense Activity generated the waste: (Check one) Reference List, No. 3
 - ☒ Weapons activities including defense inertial confinement fusion
 - ☐ Verification and control technology
 - ☐ Defense nuclear waste and material by products management
 - ☐ Defense nuclear waste and materials security and safeguards and security investigations
 - ☐ Naval Reactors development
 - ☐ Defense research and development
 - ☐ Defense nuclear materials production

Reviewed For Classification/UCNI

By V. S. SENDELWECKDate 3 SEP 03 424

PUBLIC RELEASE APPROVED

Supplemental Documentation:

- Process design documents: Note 4
- Standard operating procedures: Note 4
- Safety Analysis Reports: Note 4
- Waste packaging logs: Note 4
- Test plans/research project reports: Note 4
- Site data bases: Note 4
- Information from site personnel: Note 4
- Standard industry documents: Note 4
- Previous analytical data: Note 4
- Material safety data sheets: Note 4
- Sampling and analysis data from comparable/surrogate Waste: Note 4
- Laboratory notebooks: Note 4

Sampling and Analysis Information⁽¹⁾

[For the following, when applicable, enter procedure title(s), number(s) and date(s)]

- ☒ Radiography: Reference List Nos. 13, 14, 19
- ☒ Visual Examination: 11, 12, 16, 17, 18, 21, 22
- ☒ Headspace Gas Analysis
 - VOCs: Reference List, No. 7, 15, 20
 - Flammable: Reference List, No. 7, 15, 20
 - Other gases (specify): N/A
- ☐ Homogeneous Solids/Soils/Gravel Sample Analysis (Tables 1, 3, 4, and 5 are not applicable and not included)
 - Total metals: N/A
 - PCBs: N/A
 - VOCs: N/A
 - Nonhalogenated VOCs: N/A
 - Semi-VOCs: N/A
 - Other (specify): N/A

Waste Stream Profile Form certification:

I hereby certify that I have reviewed the information in this Waste Stream Profile Form, and it is complete and accurate to the best of my knowledge. I understand that this information will be made available to regulatory agencies, and that there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations.

G. A. O'Leary
Signature of Site Project Manager

G. A. O'Leary, Manager TRU Programs
Printed Name and Title

9/3/03
Date

C. L. Ferrera
Signature of Site QA Officer

C. L. Ferrera, TWCP Site QAO
Printed Name and Title

9/3/03
Date

- NOTE**
- (1) Use back of sheet or continuation sheets, if required.
 - (2) EPA Hazardous Waste Codes were determined using acceptable knowledge and confirmed using headspace gas sampling and analysis (see attached Characterization Information Summary documenting this determination).
 - (3) This waste stream is not identified in the WTWBIR. The WIPP ID assigned corresponds to the Waste Stream Profile Number. The Summary Category Group, Waste Matrix Code Group, and Waste Matrix Code are based on acceptable knowledge (see attached AK Summary). The BIR ID reported in WWIS is assigned using standard BIR conventions for those containers that do not have a valid BIR ID in the WTWBIR.
 - (4) See the References section in the Acceptable Knowledge Summary (attached) for additional backup documentation associated with this waste stream.

REFERENCE LIST

1. Backlog Waste Reassessment Baseline Book, Waste Form 52, Combustibles, June 2003.
2. Waste Stream and Residue Identification and Characterization (WSRIC), Version 7, and archived versions.
3. RFETS TRU Waste Acceptable Knowledge Supplemental Information, RF/RMRS-97-018, Revision 10, August 2002.
4. Waste and Environmental Management System (WEMS) database.
5. Transuranic (TRU) Waste Certification, PRO-X05-WC-4018, Revision 4, May 2002.
6. Acceptable Knowledge TRU/TRM Waste Stream Summaries, RMRS-WIPP-98-100, Section 7.12, Revision 0, August 2003.
7. GC/MS Determination of Volatile Organics Waste Characterization, L-4111-X, January 2002.
8. Waste Characterization, Generation, and Packaging, 1-PRO-079-WGI-001, Revision 4, May 2002.
9. Waste Characterization Program Manual, 1-MAN-036-EWQA-Section 1.6.1, Revision 3, May 2002.
10. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF101.35 (TRM Combustible and Plastic Wastes [F005]) Lot 1, TRG-137-03, August 2003.
11. Visual Examination for Confirmation of RTR, 4-H80-776-ASRF-007, Revision 5, June 2001.
12. TRU/TRM Waste Visual Verification (V²) and Data Review, PRO-1031-WIPP-1112, Revision 2, February 2003.
13. Real-Time Radiography Testing of Transuranic and Low-Level Waste, 4-W30-NDT-00664, Revision 5, October 2001.
14. Real-Time Radiography Testing of Transuranic and Low-Level Waste in Building 569, 4-119-NDT-00569, Revision 6, January 2002.
15. Headspace Gas Sampling And Analysis Using An Automated Manifold, L-4231-F, March 2002.
16. Visual Examination for Confirmation of RTR, PRO-1471-VE-771, Revision 0, November 2001.
17. Glovebox and C-Cell Waste Operations, PRO-1358-440-VERP, Revision 2, September 2002.
18. RTR Visual Examination Confirmation, PRO-1608-VECRTR-371, Building 371, Revision 0, October 2002.
19. Mobile Real-Time Radiography Testing of Transuranic and Low-Level Waste, PRO-1520-Mobile-RTR, Revision 0, May 2002.
20. PRO-1678-HGAS-S&A, Headspace Gas Sampling and Analysis Using an On-Line Integrated System, Revision 0, June 2003.
21. Residue Repack, Building 371; PRO-544-SALT REPACK-371, Revision 5, January 2002.
22. Combustible Residue Repackaging, PRO-823-REPACK-371, Revision 1, March 2001.

September 3, 2003

Form A
Reconciliation with Data Quality Objectives

I certify by signature (below) that sufficient data have been collected to determine the following Program-required waste parameters:

WSPF # RF101.35

| Item | Check Box ^a | Reconciliation Parameter |
|------|------------------------|---|
| 1 | ✓ | Waste Matrix Code as reported in WEMS. |
| 2 | ✓ | Waste Material Parameter Weights for individual containers as reported in WEMS. |
| 3 | ✓ | The waste matrix code identified is consistent with the type of sampling and analysis used to characterize the waste. |
| 4 | ✓ | Container mass and activities of each radionuclide of concern as reported in WEMS. |
| 5 | ✓ | Each waste container of waste contains TRU radioactive waste. |
| 6 | ✓ | Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and the number of samples collected for each VOC in the headspace gas of waste containers in the waste stream/waste stream lot. |
| 7 | N/A | Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and number of samples collected for VOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000. |
| 8 | N/A | Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, number of samples collected for SVOCs in the waste stream/waste stream lot. Summary Categories S3000 and S4000. |
| 9 | N/A | Mean concentrations, UCL ₉₀ for the mean concentrations, standard deviations, and number of samples collected for metals in the waste stream/waste stream lot. Summary Categories S3000 and S4000. |
| 10 | N/A | Sufficient number of samples was taken to meet statistical sampling requirements. |
| 11 | ✓ | Only validated data were used in the above calculations, as documented through the site data review and validation forms and process. |
| 12 | ✓ | Waste containers were selected randomly for sampling, as documented in site procedures. |
| 13 | ✓ | The potential flammability of TRU waste headspace gases. |
| 14 | ✓ | Sufficient number of waste containers was visually examined to determine with a reasonable level of certainty that the UCL ₉₀ for the misclassification rate is less than 14 percent. |
| 15 | ✓ | Whether the waste stream exhibits a toxicity characteristic (TC) under 40 CFR Part 261, Subpart C. |
| 16 | ✓ | All TICs were appropriately identified and reported in accordance with the requirements of the WIPP WAP prior to submittal of a waste stream profile form for a waste stream or waste stream lot. |
| 17 | ✓ | The overall completeness, comparability, and representativeness QAOs were met for each of the analytical and testing procedures as specified in the WIPP WAP Sections B3-2 through B3-9 prior to submittal of a waste stream profile form for a waste stream or waste stream lot. |
| 18 | ✓ | The RTLs (i.e., PRQLs) for all analyses were met prior to submittal of a waste stream profile form for a waste stream or waste stream lot. |
| 19 | ✓ | Appropriate packaging configuration and DAC were met and documented in the headspace gas sampling documentation and the drum age was met prior to sampling. |
| 20 | ✓ | Whether the waste stream can be classified as hazardous or non-hazardous at the 90-percent confidence limit. |

^a Check (✓) indicates that data or acceptable knowledge are sufficient to determine the waste parameters and that the waste parameters have been reported in the listed document or database. N/A indicates parameter does not apply to waste stream. No indicates data are insufficient.


 Signature of Site Project Manager

 G. A. O'Leary
 Printed Name

 9/3/03
 Date

Data Summary Report—Table 2: Headspace Gas Summary Data

WSPF # RF101.35

Sampling and Analysis Method (check one):

☒ 100% Sampling

☐ Reduced Sampling

2A

| ANALYTE ^a | # Samples ^b | Transform Applied ^c | Normality Test (Pass/Fail) ^d | Mean ^d | UCL ₉₅ ^d | Transformed RTL ^e | Un-Transformed RTL ^e (ppmv) | EPA Code ^f |
|---------------------------------------|------------------------|--------------------------------|---|-------------------|--------------------------------|------------------------------|--|-----------------------|
| 1,1-Dichloroethane | 4 | Log | Fail ^b | -1.082 | -0.883 | 2.3026 | 10 | |
| 1,2-Dichloroethane | 3 | Log | Fail ^b | -1.236 | -1.032 | 2.3026 | 10 | |
| 1,1-Dichloroethylene | 0 | | | 0.360 | | | 10 | |
| cis-1,2-Dichloroethylene | 1 | Log | Fail ^b | -1.353 | -1.183 | 2.3026 | 10 | |
| trans-1,2-Dichloroethylene | 0 | | | 1.200 | | | 10 | |
| 1,1,2,2-Tetrachloroethane | 0 | | | 0.332 | | | 10 | |
| 1,1,1-Trichloroethane | 1 | Log | Fail ^b | -1.358 | -1.180 | 2.3026 | 10 | |
| 1,1,2-Trichloro-1,2,2-Trifluoroethane | 1 | Log | Fail ^b | -1.356 | -1.180 | 2.3026 | 10 | |
| 1,2,4-Trimethylbenzene | 0 | | | 0.377 | | | NA | |
| 1,3,5-Trimethylbenzene | 0 | | | 0.379 | | | NA | |
| Acetone | 15 | Log | Fail ^b | 1.807 | 2.184 | 4.6052 | 100 | |
| Benzene | 12 | Log | Fail ^b | 0.320 | 0.895 | 2.3026 | 10 | |
| Bromoform | 0 | | | 0.363 | | | 10 | |
| Butanol | 1 | Log | Fail ^b | 1.523 | 1.669 | 4.6052 | 100 | |
| Carbon disulfide | 19 | Sq. Rt. | Fail ^b | 3.879 | 4.554 | 3.1623 | 10 | F005 |
| Carbon tetrachloride | 0 | | | 0.354 | | | 10 | |
| Chlorobenzene | 2 | Log | Fail ^b | -1.335 | -1.201 | 2.3026 | 10 | |
| Chloroform | 7 | Log | Fail ^b | -1.087 | -0.854 | 2.3026 | 10 | |
| Cyclohexane | 5 | Log | Fail ^b | -0.899 | -0.581 | NA | NA | |
| Ethyl benzene | 0 | | | 0.360 | | | 10 | |
| Ethyl ether | 0 | | | 0.491 | | | 10 | |
| Methanol | 6 | Log | Fail ^b | 2.332 | 2.539 | 4.6052 | 100 | |
| Methyl ethyl ketone | 8 | Log | Fail ^b | 1.058 | 1.337 | 4.6052 | 100 | |
| Methyl isobutyl ketone | 0 | | | 3.291 | | | 100 | |
| Methylene chloride | 9 | Log | Fail ^b | -0.523 | -0.170 | 2.3026 | 10 | |
| o-Xylene | 0 | | | 0.363 | | | 10 | |
| m,p-Xylene | 0 | | | 0.530 | | | 10 | |
| Tetrachloroethylene | 1 | Log | Fail ^b | -1.341 | -1.161 | 2.3026 | 10 | |
| Toluene | 27 | Sq. Rt. | Fail ^b | 2.720 | 3.106 | 8.4865 | 72 ^g | |
| Trichloroethylene | 0 | | | 0.408 | | | 10 | |

NOTES:

- ^a A total of 29 samples were collected and analyzed. Analysis was performed for all analytes identified. Samples were not composited.
- ^b Identifies the number of samples in which the associated analyte was detected.
- ^c Identifies the type of data transformation used, if applicable, to achieve (or better achieve) a normal probability distribution of the data.

Data Summary Report—Table 2: Headspace Gas Summary Data (continued)

NOTES: (continued)

- Statistics calculated based on using $\frac{1}{2}$ the MDL for less-than-detectable observations with data transformation as identified (Reference 10). When transformation was applied, the Mean and UCL_{90} values presented are the transformed values (Reference 10). With no detectable concentrations, listed mean reflects average of one-half of reported MDL values for analyte and calculation of standard deviation and UCL_{90} values is not meaningful. With fewer than five detectable concentrations, calculated values for UCL_{90} are subject to potentially large relative error.
- RTLs for headspace gas analysis results correspond to the analyte PRQL for WIPP WAP target analytes. "NA" means the analyte is not a WIPP WAP target analyte, but instead a flammable VOC that is analyzed for compliance with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC).
- No entry indicates no associated EPA Code assigned to the waste stream based on headspace analysis.
- Limit used for evaluation of EPA Hazardous Waste Code for toluene (Reference No. 3).
- Data set (with or without transformation) did not pass the test for normality. The data set that most approximated a normal distribution was used for computation of statistics.

Data Summary Report—Table 2: Headspace Gas Summary Data (continued)

WSPF # RF101.35

2B

| TENTATIVELY IDENTIFIED COMPOUND | Maximum Observed Estimated Concentrations (ppmv) | # Samples Containing TIC |
|---|--|-----------------------------|
| 2-Ethyl-1-hexanol, CAS # 104-76-7 | 1.9 | 1 |
| Ethyl butyl ketone, CAS # 106-35-4 | 4.0 | 3 |
| Trimethylsilanol, CAS # 1066-40-6 | 4.4 | 1 |
| Hexamethyldisiloxane, CAS # 107-46-0 | 7.9 | 2 |
| 2-Pentanone, CAS # 107-87-9 | 3.3 | 1 |
| 4-Methyl-1,3-dioxane, CAS # 1120-97-4 | 11 | 4 |
| Isobutylene, CAS # 115-11-7 | 6.9 | 1 |
| Ethyl acetate, CAS # 141-78-6 | 3.9 | 1 |
| n-Heptane, CAS # 142-82-5 | 6.4 | 1 |
| Benzaldehyde, 2-nitro-[(2-nitrophenyl)methylene]hydrazone; CAS # 1929-19-7 | 2.3 | 1 |
| Fluorotrimethylsilane, CAS # 420-56-4 | 4.9 | 1 |
| Hexamethylcyclotrisiloxane, CAS # 541-05-9 | 0.89 | 1 |
| 3-Methylhexane, CAS # 589-34-4 | 5.5 | 3 |
| 2-Methylhexane, CAS # 591-76-4 | 4.4 | 1 |
| Ethyl alcohol, CAS # 64-17-5 | 22 | 3 |
| Acetic acid, CAS # 64-19-7 | 7.6 | 1 |
| Methyl chloride, CAS # 74-87-3 | 8.3 | 2 |
| Acetaldehyde, CAS # 75-07-0 | 7.7 | 2 |
| 2,4-Dimethyl-1,3-dioxane, CAS # 766-20-1 | 9.0 | 3 |
| Methyl acetate, CAS # 79-20-9 | 2.9 | 1 |

Did the data verify the acceptable knowledge? ☐ Yes ☒ No

If not, describe the basis for assigning the EPA Hazardous Waste Codes:

All of the containers in this waste stream were previously characterized as non-hazardous; however, the headspace gas for each container did contain detectable concentrations (above the PRQL) of one or more of a F005 listed solvent constituent such as carbon disulfide, methyl ethyl ketone, benzene, and/or toluene. Review of acceptable knowledge could not identify a source for these constituents and so these containers were segregated into this separate waste stream and assigned the F005 hazardous waste code as allowed by the WIPP WAP.

Statistical evaluation of the first lot of containers used to prepare this WSPF shows that only the UCL₉₀ for carbon disulfide exceeded its associated regulatory threshold limit (RTL). Other F005 constituents (e.g., methyl ethyl ketone, benzene, and/or toluene) may still be present in the waste stream; however, they were not present in a sufficient number of samples and at high enough concentration in this lot for their calculated UCL₉₀ value to exceed their associated RTL.

**Data Summary Report—Table 6: Exclusion of
Prohibited Items****WSPF # RF101.35**

The absence of prohibited items is documented through acceptable knowledge. Radiography or visual examination is performed on each container in this waste stream to verify the absence of the following prohibited items:

- Liquids
- Non-radionuclide pyrophoric materials
- Waste incompatible with backfill, seal and panel closure materials, container and packaging materials, shipping container materials, or other wastes
- Explosives or compressed gases
- PCBs in concentrations greater than or equal to 50 ppm
- Waste exhibiting the characteristics of ignitability, corrosivity or reactivity
- Non-mixed hazardous wastes

Newly generated waste is characterized by visual verification (VV) at the time of waste packaging using the visual examination (VE) technique unless the use of radiography in lieu of, or in combination with, visual verification is justified by any of the following criteria:

- Visual verification was conducted during packaging, but was unacceptable,
- Visual verification requires extensive handling of high gram content waste that results in high radioactive exposure for the VV personnel,
- Situation where waste packaging is conducted at numerous location generating small quantities of transuranic waste requiring a large number of VV personnel, and/or
- Where waste was originally packaged as low-level waste, but subsequently determined to be transuranic.

Data Summary Report—Table 7: Correlation
of Container Identification to Batch Data Reports

WSPF # RF101.35

| Package No. | Radioassay Data Package | Headspace Sample Batch No. | Headspace VOC Data Package | RTR Data Package* |
|-------------|-------------------------|----------------------------|----------------------------|-------------------|
| D41065 | SGS-371-DP-99-015 | 01W0138 | HVOC-DP-00461 | 6T-2004 |
| D44988 | 371DC1-DP-052101 | 02W0075 | HGAS-DP-00345 | 6T-2011 |
| D49908 | SGS-371-DP-99-038 | 02W0005 | HGAS-DP-00254 | 6T-2032 |
| D50817 | SGS-371-DP-00-008 | 02W0111 | HGAS-DP-00267 | 6T-2061 |
| D53178 | CPN-01-028 | 01W0135 | HVOC-DP-00455 | 6T-2014 |
| D63074 | CPN-01-019 | 01W0128 | HVOC-DP-00474 | 6T-1793 |
| D63082 | CPN-01-019 | 01W0128 | HVOC-DP-00474 | 6T-1793 |
| D63086 | CPN-01-001 | 00W0084 | HVOC-DP-00355 | 6T-1698 |
| D63203 | CPN-01-020 | 01W0134 | HVOC-DP-00454 | 6T-1794 |
| D63247 | 371DC1-DP-051701 | 02W0111 | HGAS-DP-00267 | 6T-2051 |
| D68775 | CIQ-98-022 | 00W0027 | HVOC-DP-00301 | 6T-1657 |
| D68792 | CIQ-01-060 | 01W0184 | HVOC-DP-00511 | 6T-1867 |
| D69337 | CIQ-97-006 | 01W0154 | HVOC-DP-00483 | 6T-2047 |
| D69517 | CIQ-97-004 | 00W0004 | HVOC-DP-00276 | 6T-1631 |
| D82537 | CIQ-01-038 | 01W0097 | HVOC-DP-00431 | 5T-0167 |
| D85061 | CIQ-97-015 | 00W0050 | HVOC-DP-00324 | 6T-1682 |
| D85338 | CIQ-97-011 | 00W0049 | HVOC-DP-00323 | 6T-1680 |
| D85920 | CIQ-99-006 | 00W0041 | HVOC-DP-00315 | 6T-1673 |
| D86007 | CIQ-99-032 | 00W0014 | HVOC-DP-00289 | 6T-1654 |
| D87008 | CIQ-99-012 | 00W0035 | HVOC-DP-00310 | 6T-1666 |
| D88618 | CIQ-98-020 | 00W0022 | HVOC-DP-00298 | 6T-1653 |
| D90107 | CPN-01-045 | 01W0131 | HVOC-DP-00453 | 6T-2000 |
| D92470 | CPN-00-010 | 00W0006 | HVOC-DP-00279 | 6T-1650 |
| D94724 | CIQ-00-019 | 00W0026 | HVOC-DP-00300 | 6T-1654 |
| D97420 | CIQ-99-031 | 01W0073 | HVOC-DP-00411 | 6T-1787 |
| D99756 | CPN-00-013 | 00W0013 | HVOC-DP-00288 | 6T-1615 |
| DA4892 | CIQ-00-037 | 00W0077 | HVOC-DP-00351 | 6T-1687 |
| DA6985 | CIQ-00-045 | 01W0007 | HVOC-DP-00369 | 6T-1664 |
| DA9259 | CIQ-00-046 | 01W0112 | HVOC-DP-00439 | 5T-0128 |

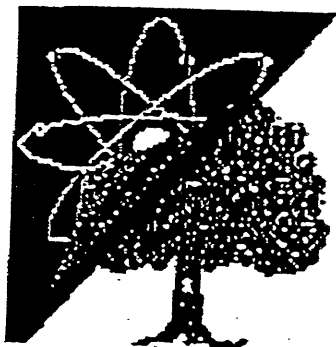
NOTES:

- * Radiography was performed on all containers identified here. All of the containers were candidates for visual examination to confirm radiography; however, none were selected.

Acceptable Knowledge Summary

WSPF # RF101.35

RMRS-WIPP-98-100, Acceptable Knowledge TRU/TRM Waste Stream Summaries, Section 7.12, TRM Combustible and Plastic Waste (F005) (attached).



Rocky Flats Environmental Technology Site

ACCEPTABLE KNOWLEDGE INFORMATION

**ACCEPTABLE KNOWLEDGE TRU/TRM
WASTE STREAM SUMMARIES**

RMRS-WIPP-98-100

Section 7.12

TRM Combustible and Plastic Wastes (F005)

Profile No. RF101.35

Revision 0

Reviewed for Classification/UCNI

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7.12 TRM Combustible and Plastic Wastes (F005)

Profile No. RF101.35

Acceptable Knowledge Waste Stream Summary

Waste Stream Name: TRM Combustible and Plastic Wastes (F005)

Generation Buildings: Buildings 371, 559, 707, 771, 774, 776, 777, and 779 ^(5,7)

Waste Stream Volume (Retrievably Stored): 189 55-gallon drums and 1 SWB ^(5,7)

Generation Dates (Retrievably Stored): July 1987 – September 2001 ^(5,7)

Waste Stream Volume (Newly Generated): 3 55-gallon drums ^(5,7)

Generation Dates (Newly Generated): October 2001 – November 2001 ^(5,7)

Waste Stream Volume (Projected): None ^(6,7)

Generation Dates (Projected): N/A ^(6,7)

TRUCON Content Codes⁽¹⁾: RF 116A, RF 116C, RF 116D, RF 116DF, RF 116E, RF 116EF, RF 116F, RF 116G, RF 116GF, RF 116H, RF 116I, RF 116J, RF 116K, RF 116KF, RF 116L, RF 116M, RF 116MF, RF 116N, RF 116P, RF 116PF, RF 116Q, RF 116R, RF 116RF, RF 116S, RF 116SF, RF 116T

Process Knowledge Demonstrates Flammable VOCs in Headspace < 500 ppm: No (see Sec. 7.12.6)

7.12.1 Transuranic Waste Baseline Inventory Report Information ⁽²⁾

WIPP Identification Numbers: RF101.35

Summary Category Group: S5000 - Waste Matrix Code Group: Combustible Waste

Waste Matrix Code: S5390

Waste Stream Name: TRM Combustible and Plastic Wastes (F005)

Description from the TWBIR: Cloth, paper, cellulosic, and plastic debris material generated from plutonium operations/activities with assigned EPA Hazardous Waste Number F005.

NOTE: This waste stream is not identified in the TWBIR. The WIPP ID assigned corresponds to the Waste Stream Profile Number. The Summary Category Group, Waste Matrix Code Group, and Waste Matrix Code are based on acceptable knowledge as provided in Section 7.12.2.

7.12.2 Waste Stream Description

Transuranic mixed (TRM) combustible and plastic wastes assigned EPA Hazardous Waste Number F005 consist of dry combustibles, wet combustibles, and plastic. These wastes are similar in material, physical form, and hazardous constituents, and therefore constitute a single waste stream. In accordance with Attachment B4 of the WAP, this waste stream is assigned Summary Category Group S5000 and Waste Matrix Code Group *Combustible Waste*. Table 7.12-1 presents the waste matrix codes and waste material parameters for combustible and plastic wastes.⁽³⁾

Table 7.12-1, Combustible and Plastic Waste (F005) Description

| IDC | IDC Description | Waste Matrix Code | Waste Material Parameters | Weight % (Average) |
|-----|-----------------------------|----------------------|-----------------------------|--------------------|
| 330 | Dry Combustibles | S5390, Unknown/ | Cellulosics ¹ | 85% |
| 821 | Dry Combustibles, TRU Waste | Other Organic Debris | Plastics ² | 10% |
| 831 | Dry Combustibles, TRM Waste | | Iron-based Metal/Alloys | 4% |
| | | | Other Inorganic Materials | 1% |
| 336 | Wet Combustibles | S5390, Unknown/ | Cellulosics ¹ | 85% |
| 822 | Wet Combustibles, TRU Waste | Other Organic Debris | Plastics ² | 11% |
| 832 | Wet Combustibles, TRM Waste | | Iron-based Metal/Alloys | 2% |
| | | | Rubber | 1% |
| | | | Aluminum-based Metal/Alloys | 1% |
| 337 | Plastic | S5390, Unknown/ | Plastics ² | 95% |
| 825 | Plastic, TRU Waste | Other Organic Debris | Cellulosics ¹ | 3% |
| 833 | Plastic, TRM Waste | | Iron-based Metal/Alloys | 1% |
| | | | Other Inorganic Materials | 1% |

Notes:

1. The average weight percent of cellulosic materials is based on RTR and includes the fiberboard liner.
2. The average weight percent of plastic materials is based on RTR and includes plastic liner bags.

IDC 330, Dry Combustibles: Dry combustibles such as cloth, paper, and wood. Dry combustibles are assigned IDC 330 at the point of generation and may change to IDC 821 or 831 following radioassay to designate them as being TRU waste or TRM waste. Some containers in this waste stream may be assigned IDC 821 because F-listed solvent VOCs were detected in the headspace gas but are being managed as non-mixed waste until the waste is ready for off-site shipment at which point the EPA hazardous waste number is applied (refer to Section 7.12.5). RTR inspections of containers assigned these IDCs have identified significant amounts of plastic materials. Containers with more than 50% plastic, by weight, are reassigned the appropriate plastic IDC.⁽⁴⁾

IDC 336, Wet Combustibles: Wet combustibles such as paper, cloth, and wood that contain a discernible amount of moisture. The wastes are drained or wrung out before packaging to prevent accumulation of free liquid. Wet combustibles are assigned IDC 336 at the point of generation and may change to IDC 822 or 832 following radioassay to designate them as being

TRU waste or TRM waste. Some containers in this waste stream may be assigned IDC 822 because F-listed solvent VOCs were detected in the headspace gas but are being managed as non-mixed waste until the waste is ready for off-site shipment at which point the EPA hazardous waste number is applied (refer to Section 7.12.5). RTR inspection of containers assigned this IDC has identified significant amounts of plastic materials. Containers with more than 50% plastic, by weight, are reassigned the appropriate plastic IDC.⁽⁴⁾

IDC 337, Plastic: Plastics may include polyvinyl chloride (PVC) sheeting, poly bottles, supplied air suits, polyethylene, and other plastics. Plastics are assigned IDC 337 at the point of generation and may change to IDC 825 or 833 following radioassay to designate them as being TRU waste or TRM waste. Some containers in this waste stream may be assigned IDC 825 because F-listed solvent VOCs were detected in the headspace gas but are being managed as non-mixed waste until the waste is ready for off-site shipment at which point the EPA hazardous waste number is applied (refer to Section 7.12.5). This IDC includes containers originally assigned combustibles IDCs that were reassigned because RTR inspection of the containers identified more than 50% plastic, by weight.⁽⁴⁾

7.12.3 Areas of Operation

TRM combustible and plastic wastes assigned EPA Hazardous Waste Number F005 are generated by the following defense operations in Buildings 371, 559, 707, 771, 774, 776, 777, and 779.^(3,4,5)

- Plutonium Production
- Plutonium Recovery
- Laboratory Operations
- Waste Treatment
- Research and Development
- Maintenance
- Residue Repackaging
- Decontamination and Decommissioning Operations

7.12.4 Generation Processes

This waste stream includes combustible and plastic wastes generated as non-hazardous waste by nearly every operation on site. EPA hazardous waste number F005 is assigned to these containers because detectable concentrations of carbon disulfide, methyl ethyl ketone, benzene, or toluene was found in the container headspace.⁽⁴⁾ Table 7.12-2 provides the title of each generating process along with the corresponding WSRIC building and process number. A description of each of these processes, process flow diagrams, and details of each combustible and plastic waste stream can be found in the *WSRIC Building Books* or *archived WSRIC files*.

Table 7.12-2, TRM Combustible and Plastic Waste (F005) Generating Processes

| Building | Process | Title |
|---------------------|---------|---|
| Building 371 | | |
| 371 | 1 | DCHP Preparation |
| 371 | 2 | Caustic Treatment |
| 371 | 3 | Repack Operations |
| 371 | 4 | Analytical Lab |
| 371 | 5 | Chemical Standards Laboratory |
| 371 | 6 | PROVE Vacuum System |
| 371 | 7 | Process Vent Scrubber |
| 371 | 8 | Utility Scrubber System |
| 371 | 15 | General Waste (RMMA) and Deactivation |
| 371 | 18 | Heating, Ventilation, & Air Conditioning |
| 371 | 21 | Nitrate Contaminated Residue Treatment |
| 371 | 23 | Salt Residues Repack Project |
| 371 | 25 | Sand Slag & Crucible Residue Repack Project |
| Building 559 | | |
| 559 | 1 | ICP Mass Spectrometry Metal Analysis |
| 559 | 2 | Dynamic Analysis |
| 559 | 3 | X-Ray Methods |
| 559 | 4 | Infrared Analysis |
| 559 | 5 | GC/MS Environmental Samples/RCRA Waste |
| 559 | 6 | Thermal Analysis |
| 559 | 7 | Emissions Spectroscopy |
| 559 | 8 | Miscellaneous Analyses |
| 559 | 9 | Isotopic Analysis |
| 559 | 11 | Nondestructive Analysis |
| 559 | 12 | Uranium Analysis |
| 559 | 13 | Gallium Analysis |
| 559 | 14 | Plutonium Assay |
| 559 | 15 | Carbon Analysis |
| 559 | 16 | Raschig Ring Analysis |
| 559 | 17 | Coulometric Titration |
| 559 | 18 | Iron & Silicon Nonroutine |
| 559 | 19 | Nonroutine Ion Chromatograph |
| 559 | 20 | Nonroutine Plutonium Oxide |
| 559 | 21 | Assay Of Uranium By Auto Titration |
| 559 | 22 | Specific Ion Electrode |
| 559 | 23 | Sample Receiving |
| 559 | 24 | Sample Break In And Sample Cutting |
| 559 | 25 | Maintenance |
| 559 | 26 | Utilities |
| 559 | 28 | ICP Spectroscopy |
| 559 | 29 | Atomic Absorption |
| 559 | 30 | General Waste |
| 559 | 31 | Extractions |
| 559 | 33 | GC Analysis—Production Support |

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| Building | Process | Title |
|---------------------|---------|--|
| 559 | 34 | GC Analysis—Production Support |
| 559 | 35 | Total Metals Digestion |
| 559 | 44 | Reactivity Characteristic Test of Pyrochemical Salts |
| 559 | 48 | Ion Chromatography |
| 559 | 49 | Radiochemical Operations |
| 559 | 50 | Particle Size Distribution |
| Building 707 | | |
| 707 | 1 | Module A |
| 707 | 2 | Module K/X-Y Retriever |
| 707 | 3 | Module J |
| 707 | 4 | Rolling/Forming, Module B |
| 707 | 7 | Machining—Module C |
| 707 | 14 | Assembly—Module E |
| 707 | 16 | Assembly—Superdry |
| 707 | 30 | Maintenance |
| 707 | 32 | Duct Remediation |
| 707 | 35 | Module B Through H |
| 707 | 36 | Deactivation/Decon/Decommissioning (D3) |
| 707 | 39 | Salt Stabilization |
| 707 | 41 | Dry Residue Repack |
| Building 771 | | |
| 771 | 1 | High-Level Dissolution |
| 771 | 2 | Low-Level Dissolution |
| 771 | 3 | Cation Exchange |
| 771 | 4 | Anion Exchange |
| 771 | 5 | Feed Evaporation |
| 771 | 6 | Precipitation Feed Batching |
| 771 | 7 | Precipitation |
| 771 | 8 | Precipitation Filtrate Evaporation |
| 771 | 9 | Calcination |
| 771 | 10 | Hydrofluorination |
| 771 | 11 | Reduction And Button Breakout |
| 771 | 12 | Miscellaneous Residue Processing |
| 771 | 13 | Metal Burning |
| 771 | 14 | Crushing And Grinding |
| 771 | 15 | Spray Leach |
| 771 | 16 | Oralloy Leach |
| 771 | 17 | Oralloy (OY) Precipitation |
| 771 | 18 | Special Recovery Anion Exchange |
| 771 | 19 | Caustic Filtration |
| 771 | 20 | Fume Scrubber |
| 771 | 21 | Vacuum Systems |
| 771 | 23 | Radioactive Inorganic Laboratory |
| 771 | 24 | Chemical Standards Laboratory |
| 771 | 25 | Chemical Technology |
| 771 | 26 | Plutonium Metallurgy |
| 771 | 27 | Plenums |
| 771 | 32 | Radiological Safety |

| Building | Process | Title |
|-------------------------|---------|--|
| 771 | 35 | General Building Waste (RMMA) |
| 771 | 36 | H-4 Support Vacuum Systems |
| 771 | 38 | Radiation Instrumentation |
| 771 | 43 | Set 44, Decontamination & Decommissioning |
| 771 | 56 | Set 46, Decontamination & Decommissioning |
| 771 | 62 | Support, Decontamination & Decommissioning |
| 771 | 63 | Waste Drum & Crate Repackaging Operation |
| 771 | 64 | D&D Fixed Equipment, Glovebox and Tank Removal |
| Building 774 | | |
| 774 | 9 | Miscellaneous Waste Handling |
| Building 776/777 | | |
| 776 | 1 | Pyrochemical Processing |
| 776 | 2 | Size Reduction |
| 776 | 3 | Advanced Size Reduction Facility |
| 776 | 5 | Coating |
| 776 | 14 | General Building Waste |
| 776_777 | 6 | General Building Waste and Decommissioning |
| Building 779 | | |
| 779 | 1 | Nuclear Joining |
| 779 | 2 | Generic Residue Treatment Process Wastes |
| 779 | 4 | Molten Salt Extraction |
| 779 | 5 | Salt Scrub for Molten Salt Extraction |
| 779 | 6 | Electrorefining |
| 779 | 7 | Salt Scrub for Electrorefining |
| 779 | 9 | Hydride-Hydride And Metal |
| 779 | 10 | Hydride-Hydride/Oxide |
| 779 | 11 | Hydride-Acid Leach |
| 779 | 12 | Hydride-Acid Boil Down (Calcining) |
| 779 | 24 | Pu Tech-Nuclear Material Compatibility Studies |
| 779 | 28 | Utilities |
| 779 | 42 | Decontamination and Decommissioning Activities |

7.12.5 RCRA Characterization

This waste stream is characterized as a mixed waste. The specific BWR Baseline Book Subpopulations and WSRIC Process Numbers associated with combustible and plastic wastes assigned EPA hazardous waste number F005 are listed in the WEMS AK Waste Stream Summary for Profile Number RF101.35.⁽⁹⁾

The containers in this waste stream were originally assigned to a nonhazardous waste stream by acceptable knowledge (AK), but were subsequently segregated into this waste stream after completion of headspace gas sampling/analysis. Containers in this waste stream consist of combustible/plastic debris that have been assigned EPA hazardous waste number F005 because detectable concentrations of F005-listed VOCs were found in the container headspace.⁽⁹⁾ Headspace gas sampling and analysis of containers in this waste stream detected 17 VOCs. Statistics were calculated based on using one-half the

method detection limit (MDL) for less-than-detectable observations with data transformation applied where appropriate. Using this method, the calculated 90% upper confidence limit (UCL_{90}) for the mean concentration of the F005-listed solvent carbon disulfide exceeded the regulatory threshold limit (RTL). F005-listed solvents methyl ethyl ketone, benzene and toluene were detected at less significant concentrations.⁽⁸⁾

Visual examination of waste contents at the time of packaging and/or RTR is used to verify that the waste stream does not contain free liquid, explosives, non- radionuclide pyrophoric materials, compressed gasses, or reactive waste. Therefore, this waste stream does not exhibit the characteristics of ignitability (D001), corrosivity (D002), or reactivity (D003).

Beryllium parts were used in the manufacture/assembly of weapons components, and residual beryllium contamination of plutonium parts may have occurred. Combustibles and plastics associated with these operations may have been contaminated with beryllium and therefore, residual quantities of beryllium (less than one percent by weight) may be present in the waste stream. Any beryllium present is as a contaminant of the process and not as unused commercial chemical product, and therefore is not a P015-listed waste. Based on an evaluation of this waste and the processes that generated the waste, including chemical usage, this waste stream does not exhibit the characteristic of toxicity and was not mixed with any another listed waste.^(3,4)

The combustible and plastic waste streams generated at RFETS and sent to the INEEL for storage have the same IDC but are considered different waste streams because of the EPA hazardous waste numbers assigned. The INEEL waste streams (Local ID Numbers ID-RFO-330T, ID-RFO-336T, and ID-RFO-337T) were generated and shipped to INEEL prior to the full implementation of RCRA and therefore, EPA hazardous waste numbers were assigned to each IDC as a whole.⁽²⁾

7.12.6 Transportation

The payload containers in this waste stream must also comply with the TRUPACT-II Authorized Methods for Payload Control (TRAMPAC) requirements. Flammable volatile organic compounds (VOCs) were not identified by review of process knowledge for this waste stream. However, as described above, flammable VOCs were detected in the headspace of containers in this waste stream. Therefore, flammable VOCs in the payload container headspace have the potential to exceed 500 ppm.

7.12.7 Radionuclides

Table 7.12-3 presents the radionuclides potentially present in TRM combustible and plastic wastes assigned EPA Hazardous Waste Number F005.⁽³⁾

Table 7.12-3, Combustible and Plastic Waste (F005) Radionuclides

| IDC | Description | Radionuclides | Rationale |
|-------------------|------------------|--|--|
| 330 821 831 | Dry Combustibles | WG Pu, Am-241, DU, EU, Np-237, Am-243 | IDC generated in nearly every TRU building; radionuclides dependent on generation process |
| 336 822 832 | Wet Combustibles | WG Pu, Am-241, DU, EU, Np-237, Am-243 | IDC generated in every TRU building; radionuclides dependent on generation process |
| 337 825 833 | Plastic | WG Pu, Am-241, DU, EU, Np-237, Am-243 | IDC generated in nearly every TRU building; radionuclides dependent on generation process |

Notes:

1. Am-241 is indicated only for IDCs (unless noted otherwise) in which americium operations were performed (e.g., molten salt extraction). Am-241 is part of the NDA evaluations per the CH-WAC.
2. DU and EU are indicated only for IDCs in which uranium was used or could be anticipated to be a major constituent. However uranium isotopes will be present in all IDCs as a decay product and U-234 and U-238 are evaluated by or calculated from radioassay as a CH-WAC requirement.
3. Am-243 was not initially predicted to be present by AK; however, it has been identified by NDA and is therefore added as a potential radionuclide in this waste stream.

Key: WG Pu weapons-grade plutonium
EU enriched uranium
DU depleted uranium

Am-241 americium-241
Np-237 neptunium-237
Am-243 americium-243

7.12.8 References

1. RFETS 2003. Transuranic (TRU) Waste Management Manual, Revision 6, I-MAN-008-WM-001.
2. DOE 1995. Transuranic Waste Baseline Inventory Report, Revision 2: DOE/CAO-95-1121.
3. RFETS 2002. RFETS TRU Waste Acceptable Knowledge Supplemental Information. RF/RMRS-97-018, Revision 10.
4. RFETS 2003. Backlog Waste Reassessment Baseline Book, Waste Form 52, Combustibles.
5. Waste and Environmental Management System (WEMS) database.
6. WASTREN 2003. Interoffice Memorandum from Jeff Harrison to Eric D'Amico. JLH-011-2003. February 12.
7. WASTREN 2003. Interoffice Memorandum from Scott Smith to Waste Records Center. SMS-004-2003. August 12.

8. Interoffice Memorandum from Thomas R. Gatliffe to Eric L. D'Amico, Headspace Gas Analysis Data Evaluation Report For Waste Stream Profile RF101.35 (TRM Combustible and Plastic Wastes (F005)) Lot 1, TRG-137-03, August 2003.